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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/749,347

12/30/2003

Robert S. Chau

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10/18/2005

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EXAMINER

BREWSTER, WILLIAM M

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/749,347

Applicant(s)

CHAU ET AL.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al., US Publication No. 2003/0030793 A1.

Chang teaches a method, comprising: exciting an undesirable bond in an atomic layer deposition (ALD) formed film to an energy level sufficient to activate the undesirable bond;

limitations from claim 21, a method, comprising: modifying undesirable bonds in an atomic layer deposition (ALD) formed film to an energy level sufficient to activate the undesirable bond; and exposing the film to a reactant; depositing with e.g. metal oxide, p. 3, ¶ 39; depositing p. 3, ¶ 40, and insufficient to activate the desirable bond by annealing, in fig. 1, with energy source pp. 3-4, ¶ 44-45 (see below);

limitations from claim 2, the method of claim 1, further comprising:

after exciting the undesirable bond, exposing the film to a reactant, in fig. 2, p. 1, ¶ 5;

limitations from claim 3, the method of claim 2, wherein the reactant is an oxygen source, p. 1, ¶ 5;

limitations from claim 4, the method of claim 3, wherein the oxygen source is water, p. 1, ¶ 5;

limitations from claim 5, the method of claim 2, wherein the reactant comprises a metal precursor, p. 5, ¶ 56;

limitations from claim 6, the method of claim 5, wherein the metal is one of zirconium, titanium, aluminum, gallium, cesium, indium, hafnium, tantalum, praseodymium, niobium, scandium, lutetium, cerium and lanthanum, p. 5, ¶ 56;

limitations from claim 7, the method of claim 1, wherein the undesirable bonds are metal-metal bonds, fig. 2, with multiple iterations, where the annealing will break the undesirable bonds, p. 3, ¶ 39-40;

limitations from claim 8, the method of claim 7, wherein the metal is selected from a group consisting of zirconium, titanium, aluminum, gallium, cesium, indium, hafnium, tantalum, praseodymium, niobium, scandium, lutetium, cerium and lanthanum, p. 3, ¶ 39, p. 5, ¶ 56;

limitations from claim 9, the method of claim 1, wherein the film is a metal oxide film, p. 3, ¶ 39;

limitations from claim 10, the method of claim 1, wherein exciting the undesirable bonds comprises exposing the undesirable bonds to electromagnetic radiation, pp. 3-4, ¶ 45;

limitations from claim 22, the method of claim 21, wherein modifying the undesirable bonds comprises reducing the number of undesirable bonds on the film, p. 6, ¶ 64-67;

limitations from claim 23, the method of claim 21, wherein modifying the undesirable bonds comprises minimizing the number of undesirable bonds on the film. p. 6, ¶¶ 64-67.

Chang in p. 3, ¶ 39, Chang forms metal oxides, as for example, ZrO_2 . Proffered as evidence, Lander, US Patent No. 4,067,893, in col. 1, lines 50-65 states ZrO_2 is a covalently bonded compound. With the very large number of reactants, other compounds may form including metal to metal alloys. These metal to metal alloys are ionic in nature, as proffered by evidence, Bokisa, SR., et al., US Publication No. 2004/0245113 A1 states in p. 1, ¶ 6.

So when Chang in applies an energy source to the layer, pp. 3-4, ¶¶ 44-45; the weaker undesirable ionic bonds are activated, but the energy source does not have enough energy to activate all the desirable bonds, including the covalent bonded metal oxides.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

William M. Brewster

13 October 2005
WB